

Analysis of current Governance in the Sustainable Protection of the Virunga National Park

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Abstract— This article offers an Analysis on the Governance of the Virunga National Park (ViNP) using the Landscape Approach. We started from the constant misunderstanding and perpetual opposition of the riverside population on the management of the ViNP. The question is the management strategy to involve the local population in the sustainable management of the Virunga National Park. After presenting and analyzing the data provided to us by 394 respondents constituting the sample size consider in relation to strategies of public involvement in the sustainable management of the ViNP. The results showed that the local community is not fully involved in the management of the ViNP, and for their involvement we have proposed the Landscape approach that does not exclude anyone as an alternative to the integrated and sustainable management of the Park. After several years of experimentation, the results of the old approach are far from satisfactory. This study is one of the doctoral research findings on the landscape approach to sustainable management of the ViNP.

Keywords— Protected AIREs, National Park, Landscape, Protected Area Governance, Local Participation, Waterside Population.

I. INTRODUCTION

The degradation of Biodiversity and the threats it brings to the planet's ecosystems are palpable phenomena that cannot be denied at present (FAO, 1996). Over the past century, humanity has become increasingly aware of the importance of conserving nature. In Africa the idea of nature conservation began in 1930 with the creation of several areas protected by settlers (BAMBA, 2010).

Although Central Africa currently has approximately 22.9 million ha of wetlands, some 14% of the total area, enjoy protected area status, the involvement of the local population in the management of these protected areas does not live up to the expectations of the various governments in the sub-region while the population manifests dependence on natural resources ending up in these protected areas. This local population, which is 80% affected by poverty, poses a threat to these protected areas (NGUINGUIRI, 2008)

The DRC is one of the countries rich in biodiversity due to its network of protected areas. These protected areas cover an area of 65,000km. Virunga National Park (ViNP), one of the protected networks of the DRC, is a protected area rich in its fauna and flora, its bio-diversity is of vital ecological and socio-economic importance for the populations of the DRC, unfortunately the subject of a very extensive degradation threatening certain endemic species of extinction due to the combined effect of the disorder of the armed gangs operating in the Park with the surrounding population causing poaching, illegal fishing, animal grazing, logging, encroachment of crops within the protected area, the installation of villages and services of the state within the protected area, on these pressures are added the main threats such as demographic pressure, uncontrolled immigration and oil exploration. These pressures and threats contributed to the extensive degradation of Virunga National Park, for example, about

95% of the hippo population (1200 to 30,000 individuals) was decimated during the 30 years of political instability and armed conflict with very negative impacts on the management of Lake Edward's fisheries resources. The appropriate management methods would be those that follow the notions of collective accountability. Indeed, the regulatory approach has shown its limits; there is no regulatory mechanism that has not been circumvented. So the approach incorporating the local community that does not exclude other management approaches is presented as one that can bring out new regulations in the sustainable protection of ViNP (NGUINGUIRI, 2008).

II. NOTION ON THE GOVERNANCE OF PROTECTED AREAS

For many authors, the concept of governance or management is theoretically a vague concept, in the normative definition given by the World Bank in the late 1980s, the word governance corresponds to an ideal situation of good management or administration, but this is not always the case, it is for this that it is always accompanied by a qualifying adjective and then we speak of good governance. , this perception means that this governance can be good or bad. When it comes to the management of protected areas, it is considered good when it is accountable, transparent, inclusive, participatory, respected and effective in law enforcement. According to Feral, good governance is a governance that is capable of reconciling various interests through the integration of local interests, and thus the national decision-making process through a distribution of obligations and benefits recognized as acceptable to interested parties, needless to say that it is bad when it takes the opposite view of these principles, i.e. it defends the interests of one or more actors, not everyone's.

In the DRC, after several years characterized by regulatory management, the ICCN officials have theoretically chosen a conservation policy based on the integration of local actors, obviously we can see different integrative projects such as the electrification of the surrounding villages, however, beyond the official discourses copied in the world conservation policies, and taken up in the national documents, it is clear that the place given to local populations is almost non-existent. Looking back on the ViNP case Whatever the mode of his creation according to Horry 1956. The ViNP has introduced a new way of managing in the region by marking a kind of spatial discontinuity between the newly protected areas and the inhabited areas, what must be remembered here is that this new form of management has disarticulated the way of life of local people and it is the endless conflict for these

actors, so a new approach is needed that will integrate the local population into the management of the Park in order to reduce the threats , the Landscape approach would be an alternative to open up this integrated management between the local population and the ViNP Managers(Feral,2007).

2.1 Management with Landscape Approach in the Integration of the Local Population

It is a planning of the management of a protected area that should not consider that area as an isolated entity but rather take into account the functional relationship between the area and its

periphery. In addition, planning must be consistent with national and sub-regional land use and sustainable development policies.

Simple plan of this management: it is a technical document developed by members of the village community with the support of local administration departments in collaboration with park officials. It aims to plan, over time and space, the operations to be implemented for the sustainable use of one or more resources. It is the active involvement of community members and external stakeholders in all decisions related to objectives and activities, for sustainable community and forestry development. The community is involved, consulted, provides information, asks questions and gives its opinion (Balde.D, 2004).

III. METHODOLOGY

3.1. PRESENTATION OF THE STUDY/LOCATION.



It is a park that is located in the east of the DRC on the border of the two countries, to the northeast by Uganda and to the south east by the RWANDA. It is also located

between two important basins, to the north by the Nile Basin through Lake Edouard and to the south by the Congo Basin through Lake Kivu.

3.2. Choice of site and sample.

The choice of site depends on the location of the research project "Participatory Plans for Integrated Management of Biodiversity Services of the ViNP in which this study is part of this study.

3.3. Sampling

Household sampling will be randomly stratified to identify interviewees. So in the 4 territories surrounding the ViNP we registered 27174 households. Scientific standards recommend the use of mathematical and/or statistical tricks to determine sample size, i.e. the units of analysis on which the data will be collected. As part of this research, the sample size will be determined in use of Lynch's statistical formula, which is accepted in social science research (Bautista 2000). This formula is stated as follows:

$$n = \frac{NZ^2 \cdot P(1-P)}{Nd^2 + Z^2 P(1-P)}$$

n=Sample size

N= Target population

Z= this is the constant corresponding to the 95% confidence interval. This is Z 1.96 P= prevalence which will be 50% is 0.5

d= margin of error, which is % since the level of confidence will be 95%

Thus, the sample of this study is calculated as

$$\text{follows: } n = \frac{NZ^2 \times P(1-p)}{Nd^2 + Z^2 P(1-p)}$$

$$Z= 1,96$$

$$P= 0,5$$

$$d= 0,05$$

$$(1-p)= 0,5$$

$$NZ = 27174 \cdot (1,96)^2 = 27174 \times 3,8416$$

$$= 104391,6384$$

$$p(1-p) = 0,5(1-0,5) = 0,5 \times 0,5 = 0,25$$

$$Nd^2 = 27174 \cdot (0,05^2) = 26071 \times 0,0025$$

$$= 65,1775$$

$$Z^2 \cdot p(1-p) = (1,96)^2 \times 0,5(1-0,5)$$

$$= 3,8416 \times 0,5 \times 0,5$$

$$= 3,8416 \times 0,25$$

$$= 0,9604$$

$$\text{thus: } n = \frac{104391,6384 \times 0,25}{504,85 + 0,9604} = \frac{26097,9096}{66,1379} = 394$$

Table 1 : Distribution of investigations by territory and Village

Sampling						
Territory	Village	Population	Households	Proportion	Sample	No poll
Rusthuru	Kibirizi	52 515	8752	0,32207257	127	6
	Rugari	22000	3666	0,13490837	53	6
	Rumangabo	8000	1333	0,04905424	19	6
		82 515	13751	0,50603518	199	6
Masisi	Sake/Kimoka	19226	3204	0,11790682	46	6
	Mubambiro	17225	2870	0,10561566	42	6
		36451	6074	0,22352248	88	6
Nyiragongo	Muja	9000	1500	0,05519982	22	6

	Kibumba	11000	1833	0,06745418	27	6
		20000	3333	0,12265401	49	
Goma	Mugunga	20659	3443	0,12670199	50	6
	Lacs vert	42311	573	0,02108633	8	6
		62970	4016	0,14778833	58	6
Total		201 936	27174	1	394	

Source: Territory Statistics 2019

Our sample is 394 persons

IV. RESULTS

To analyze the results, the square test will be conducted to see if collaboration plays a role in the concerted management of the ViNP.

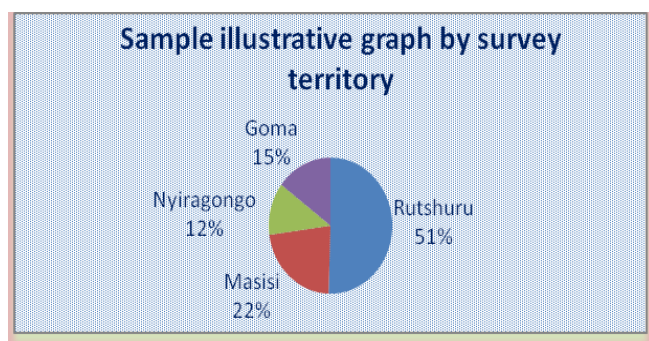


Fig.1: Sample distribution by territory and city

This figure refers to half of those surveyed, or 51% from Rutshuru territory. Second, 22% of respondents come from Masisi compared to 15% who are from the City of Goma. Finally, 12% come from the territory of Nyiragongo.

Age of respondents in households

Table 2 Age Representation of Respondents

Characteristics		Statistics	Erreur standard
Age of respondents in households	Average	40,6015	,46897
	Median	41,0000	
	Typical difference	9,30873	
	Minimum	17,00	
	Maximum	61,00	

In this table, we find that the average age of those surveyed in the four territories is 40 years, with a median of 41 years. The difference from the average is 9 years, while the oldest of all respondents consulted is 61 years of age versus the oldest who is 17 years old

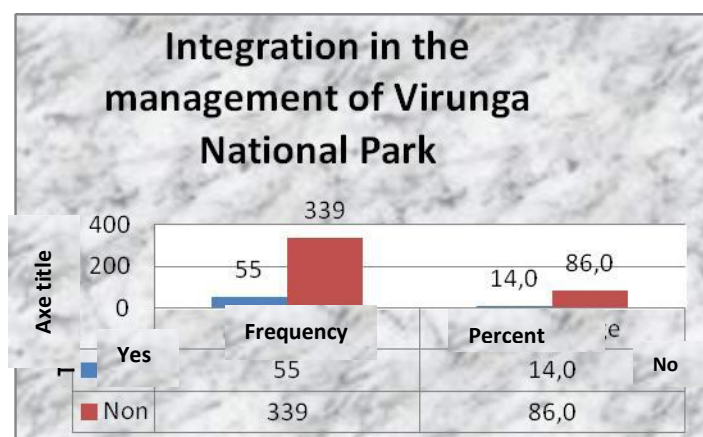


Fig.2: Integration in the management of Virunga National Park

This graph shows that 339 respondents out of 394 surveyed or 86% are not involved in the management of the park compared to 55 respondents or 14% who are integrated into the management.

Actors integrated in management,*Table.3 Table crossed between the professional occupations and the feeling to be integrated in the management of the park*

Profession of the Respondent			You feel integrated in the management of the park		Total
			Yes	No	
	Small trade	Effective	4	59	63
		% of total	1,0%	15,0%	16,0%
	Farmer	Effective	9	128	137
		% of total	2,3%	32,5%	34,8%
	Housewife	Effective	1	8	9
		% of total	,3%	2,0%	2,3%
	Pupils	Effective	3	6	9
		% of total	,8%	1,5%	2,3%
	Teachers	Effective	12	42	54
		% of total	3,0%	10,7%	13,7%
	Motorcyclist	Effective	4	35	39
		% of total	1,0%	8,9%	9,9%
	State Agent	Effective	5	9	14
		% of total	1,3%	2,3%	3,6%
	Students	Effective	3	3	6
		% of total	,8%	,8%	1,5%
	Cattle-breeder	Effective	1	16	17
		% of total	,3%	4,1%	4,3%
	Dressmaker	Effective	0	1	1
		% of total	0,0%	,3%	,3%
	Male nurse	Effective	1	6	7
		% of total	,3%	1,5%	1,8%
	Agronomist	Effective	2	1	3
		% of total	,5%	,3%	,8%
	Fisherman	Effective	1	2	3
		% of total	,3%	,5%	,8%
	Pastor	Effective	2	5	7
		% of total	,5%	1,3%	1,8%
	Mason or carpenter	Effective	1	7	8
		% of total	,3%	1,8%	2,0%
	Without profession	Effective	5	8	13
		% of total	1,3%	2,0%	3,3%
	Meat seller	Effective	1	3	4
		% of total	,3%	,8%	1,0%

Total	Effective	55	339	394
	% of total	14,0%	86,0%	100,0%

This result shows that in fact the teaching executives are implied in the management of the park on 54 questioned teachers, 12 are integrated in management, it is the greatest percentage high in this professional category. The others are represented with very small proportion to see even non-existent. Also, the category of the farmers who should occupy the first place is not also represented (9 farmers integrated against 128 not integrated).

Respondents' level of integration

Table 4: Breakdown of respondents by level of integration into Park activities

Level of integration	Frequency	Percent t
Sensitization	32	8,1
Joint meetings	4	1,0
Protection of the park	13	3,3
Park control	6	1,5
Total	55	14,0
	394	100,0

Based on this table, we find that of the 55 respondents who say they are involved in the management of the park, 32 out of 55 respondents or 8.1% are in awareness versus 3.3% who are in protection. In addition, 1% participated in joint meetings compared to 1.5% who control the park.

4. Collaboration of the ViNP actors

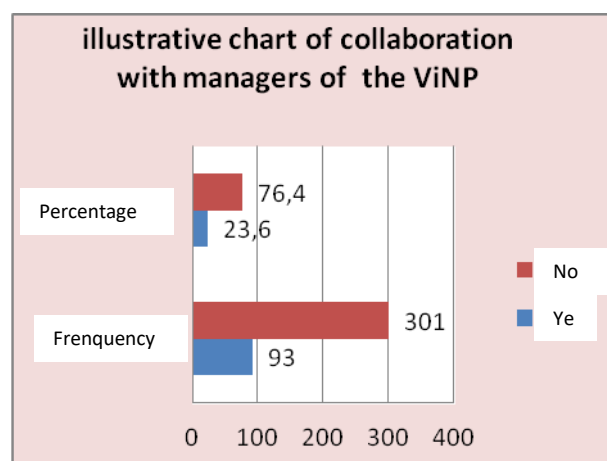


Fig.3: Illustrative chart of collaboration with the ViNP manager

Based on this graph, 301 out of 394 respondents or 76.4% do not recognize collaboration with the ViNP managers compared to 93 out of 394 respondents or 23.6% who recognize collaboration with the ViNP managers.

Collaboration of the chief of the villages with the managers of the ViNP

Research shows that the local leaders also do not collaborate with the managers of the ViNP.

"the local chiefs underline the sincere lack of collaboration with the manager of the National park of Virunga, they often note when the agents of ViNP have a interest with drawn with close to us; that is to say to justify their financing with close to the financial backers they precise at this time which they come to seek us to make the cover but the other days they influent us and local population but our participation would contribute them to relieve several challenges in management... then in term of collaboration it does not have only there nothing, not collaboration in the true direction; when they have an activity to realize of their choice apart from ViNP they inform us by official statement it is the form of collaboration with these managers of the ViNP. What prevents collaboration it is their pride through their systems police officer and of exclusion of management of the ViNP. It should be announced that there are no results of collaboration because it doesn't exist. It for this only a climate of tension between the local leaders and the managers of the National park of Virunga".

Elements being able to allow collaboration according to leaders'

"In the interviews with the chief, the villages showed that can be possible to collaborate if the agents of the ICCN express this will. According to them What will be able to allow collaboration between population and managers of the Park, it is the dialogue permanent through the continuation, installation of a framework of dialogue initially to integrate the population in the mutual management of the national park of Virunga by showing him its share of responsibility and the role which it will be able played in the durable protection of the National park of Virunga, and also to create the system of access to the resources of By this is to share interests regenerated by the park, without taxing the population. It is also

necessary to improve or change their police system of management of the park, by forming them on the matter of human right because they tend to kill any person met in the park ".

Reason of non-collaboration according to guarantors'

Table 5: Distribution of the reasons of collaboration according to guarantors'

Reasons of non collaboration	Frequen cy	Percent age
Less significant collaboration for the population	122	31,0
Do not collaborate with the old people	8	2,0
Not association with the activities of management of the Park	24	6,1
Lack of collaboration	10	2,5
Consider us as poachers	4	1,0
Difficult of communication between population and manager of the park	65	16,5
They are less co-operative	10	2,5
Do not know	47	11,9
Maltraitance of the managers	4	1,0
The managers are inaccessible	7	1,8
Total	301	76,4
Missing system	93	23,6
	394	100,0

With the resulting one from this table we understand that 122 out of 394 guarantors are 31% think that the managers do not collaborate with them because this collaboration is less significant against for the population 65 guarantors out of 394 are 16,5% which evoke a difficult communication between the population is the managers. Then, 47 guarantors are 11,9% do not have reasons which explain this non collaboration 6,1% against consider that they are not associated the activities of management of the park. As other reasons having less than 2% are such as the managers are inaccessible, they are less co-operative, the lack of will of collaboration, others consider as the managers do not collaborate with the hurdy-gurdies people, the bad treatment of the managers and they estimate that the managers regard it all as poachers. Also, the 93 guarantors are 23,6% represent those which collaborate with the managers.

A conflict between the local ICCN and leaders

"The climate is often tended between the local population and the managers of the National park of Virunga who refuse a mutually collaboration, of one side the local peoples believe that ViNP it is their medium of origin left by their ancestors and other with dimensions the agents of the ICCN regard the local population as the category of nonintellectual people, not continues and especially no informed of the importance of the Park... Yes there are conflicts between population and park; these conflicts persists because the population also says that with the creation of the park nobody of the local population was consulted since it was at the time colonial where the negros were considered things and which them right could be alienated without damage or claim. This fact to avoid the conflicts, it will be necessary that the managers of the park and the population return to the starting box, while proceeding again by the definition of the limits of the park and the redefinition of the system of conservation, as well as the zoning of the park, that there is a zone reserved for the access population for multiple uses (cows, to cultivate, build, fishing...).Except the access it is also necessary to redefine the mode of division of benefit regenerated by the park between population and ViNP, i.e. the local population wants to find its account in the income of the park in continuation to create a committee of resolution of conflicts integrating the local representatives population, heads and representative them of the ICCN ".

.Existence of a committee of vigilance and its composition to manage the conflicts between ICCN and population

"According to local heads', a true committee of resolution of conflict does not exist in ViNP, except what they call a kind COCOSI (Commuted of Coordination of the Site) of framework which brings together the managers of the Park and certain members of the communities corrupt by the latter to take part in it, this meeting is held often twice per year during which nothing is to discuss or decide in terms of access and divisions of the advantages of ViNP between managers and population, rather than to follow the sad presentations of annual achievements of the managers of the park. The latter even manage to give painfully and by our mockery the figures of people killed during the year, who are however poor members of our community caught in the park in the search of means of living. Usually, in the event of conflicts the managers of ViNP devote themselves to the arrests against the people indexed to often transfer it to the central prison with Goma. Often if they transferred people to the judicial bodies they corrupt the judges who always give reason to

the managers of the park, it is the great suffering of the population for their ancestral ground which formerly belonged to them and which became the ViNP. Thus for them, the judicial bodies constitute the committee of resolution of conflict. Indeed, the setting with the foot of one commutated of resolution of conflict would be a good strategy of collaboration, because each time that there is problem one refers at this committee to settle the **Relationships between ViNP managers and respondents**

disagreements between parts in conflicts. Moreover, one often waits to speak about the existence of commutated Community conservation (CCC) in the other parks of the RDC, moreover it is a framework recognized by the ICCN in its national strategy of conservation of the biodiversity and national strategy of Community conservation. But one wonders why similar commutated does not exist in ViNP ".

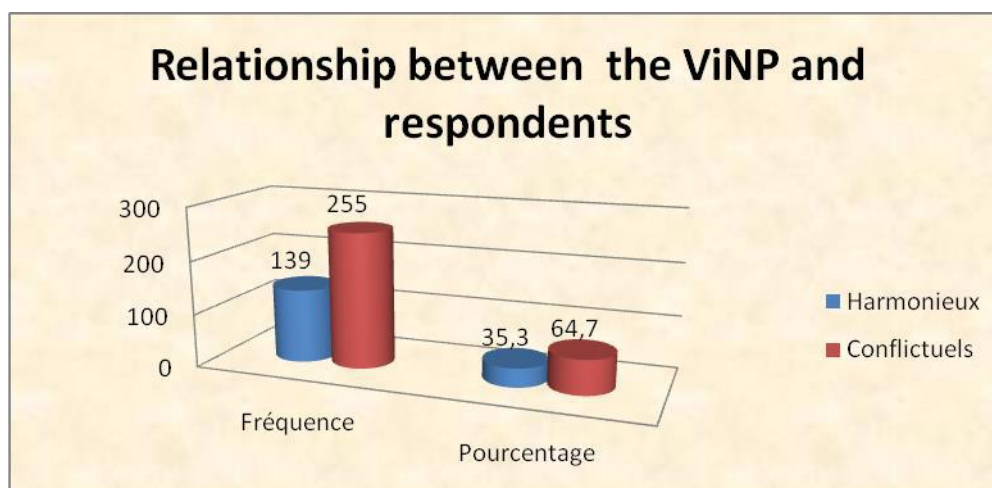


Fig.4: Graphic illustration of the relationship between ViNP managers and respondents

We find that 255 out of 394 respondents are 64.7% confirm that relations are conflicting with ViNP managers compared to 139 or 35.3% who show that the relationship is harmonious.

Relationship between the local heads and the managers of the ViNP

"The committee of the ViNP is invisible on the ground and sometimes are not known by the members of the communities. It would have to be widened these actions so that the community knows its existence. They are there beside the road whereas the actions of destruction are inside the park; it should organize the descents and approach the community to dialogue with the community."

. Relationships with other stakeholders involved in the management of the Park (NGOs AND Local Associations)

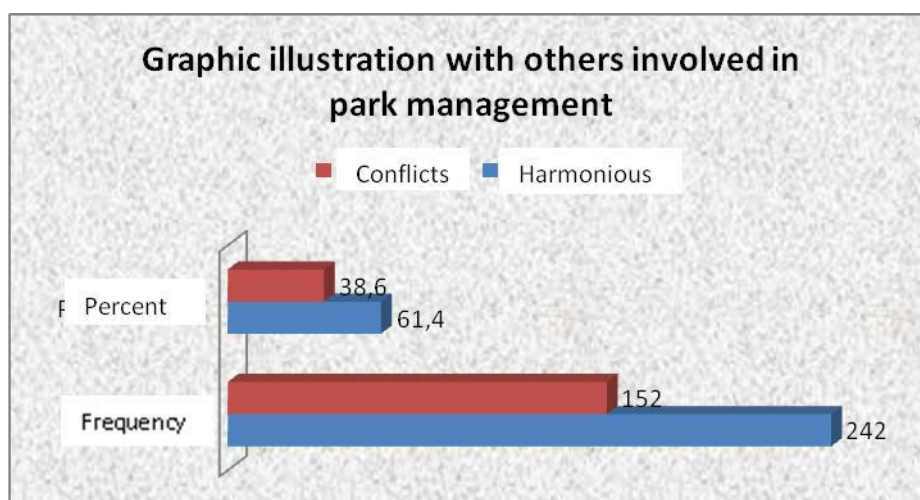


Fig.5: Graphic illustration of relationships with other stakeholders involved in park management

Based on this graph we find that 242 out of 394 respondents are 61.4% confirm that the reports are harmonious compared to 152 respondents or 38.6% who prove that the relationships are conflicting with the players involved in the management of the park. Other associations working to protect the environment in the territories targeted for this research show overall that there is collaboration only when it comes to providing training.

Other associations working in the environmental protection in the territories targeted for this research show as a whole that there is collaboration only when it is a question of providing them a formation.

"In the area there is a multitude of non-profit-making associations gathering the bordering populations of the Virunga national park of. Some nongovernmental organizations of support to the development and environmental protection like CACOPPIVI, Pevi-kacheche and LODE (League of the organizations of development and environmental protection) gather the coordinators of the known as organizations to reinforce their capacities in their speaking about the protected surfaces, the biodiversity, the mechanisms for the safeguard of the protected surfaces, the safeguard of the biodiversity... these formations are too useful because those which undergo it learn how the strategies to implement for the environmental protection or the nature conservation which undergoes threats on behalf of the man daily. Unfortunately the local population neglects that especially when there is not the premium of participation. Mechanisms of resolution of conflict

Table 6: Distribution of the guarantors according to mechanisms' of resolution of conflicts

Mechanisms of resolution of conflict	Frequency	Percentage
No conflict	38	9,6
Imprisonment of the antagonists	3	,8
Research of the reconciliation between us	6	1,5
Collaboration and dialogue with the actors	177	44,9
Direction towards the local heads to slice	126	32,0
Nothing to make	31	7,9
Direction towards justice	11	2,8
To attack the ICCN	1	,3
To take the machetes to defend oneself	1	,3
Total	394	100,0

This table shows that 126 guarantors out of 394 are 32% move towards the local heads to solve the problem against 177 guarantors are 44,9% which support the collaboration and the dialogue of the actors in conflicts. Also, 38 guarantors are 9,6% do not have a conflict against 31 guarantors are 7,9% which do not have any mechanism of resolution of conflict. As let us add, as 11 guarantors are 2,8% move towards the justice against 1,5% which seeks the reconciliation between population. A minority attacks the ICCN and a guarantor goes until taking a machete to deny himself like mechanism resolution of conflict. Lastly, 3 guarantors are 0,8% estimate that it is necessary to imprison the antagonists (les actors in opposition).

Causes of conflict between people and ViNP managers

Table 7: Breakdown of respondents by cause of conflict between population and ViNP managers

Causes of conflict between people and ViNP managers	Frequency	Percentage
Disagreement with park rangers	5	1,3
Dispute and prohibition of growing or cutting wood in the park	126	32,0
Poaching and destruction of animal species	21	5,3
Deforestation and destruction of plant species	43	10,9
Prohibition of fishing in certain areas of the ViNP	9	2,3
Non-compliance with ViNP limits	68	17,3
Confiscation of fields		
Confiscation of fields	10	2,5
Destruction of crops by ICCN officers	4	1,0
Don't know		
Don't know	7	1,8
Lack of collaboration between ICCN and the population	12	3,0
Lack of collaboration between ICCN and the population	9	2,3
Lack of information from the population	6	1,5

Imprecise delineation of ViNP	37	9,4
Refusal to graze my herds in ViNP	10	2,5
Refusal to build in ViNP	2	,5
Park resources not contributing to local development: Resource management	5	1,3
Incomprehension on the management of the ViNP	8	2,0
Low income of the riverside populations	2	,5
Not sharing park interests	8	2,0
Complicity of the population with armed groups	2	0,5
Total	394	100,0

It should be noted by this table that 126 out of 394 respondents are 32% who cite the dispute and prohibition of growing or cutting wood in the park as a cause of conflict against 68 respondents or 17.3% who report non-compliance with limits. Second, 37 respondents, 9.4%, said the park was delimited, compared to 10.9% who mentioned deforestation and destruction of plant species. Also, 21 respondents are 5.3% talk about poaching and destruction of animal species compared to 3% who confirm the non-integration of the local population in the management of the park. Second, the other causes represent less than 2%.

"... Certainly, there are frequently conflicts which are due to incomprehension between the population and the managers of the park which want to preserve the old limits whereas the bordering inhabitants of this protected surface want to advance the limits to gain a few hectares of ground to be cultivated since demography does not cease a galoper, which grown food requirements and thus in fields for cultures. To avoid the pressure of the bordering population on the park, it is necessary to support the local nongovernmental organizations so that the peasants create other generating activities of the incomes which enable them to nourish their families. These activities can be the manufacture of the blocks with lime, the culture of vegetables, the bee-keeping, the breeding of the pigs... but also the authorities of the park must think the young people of the medium who studied. When one realizes that there are 10 or 50 young people of the villages surrounding the park which was committed either as guard-park or as guides or trackers or carriers... The population will cease being hostile and it will feel integrated in the activities of the Park»

Table 8: Breakdown of proposed solutions by respondent

Envisage solutions according to respondents	Frequency	Percent
Let free the population cultivate the park	17	4,3
Imprisoning the destroyers of the ViNP	5	1,3
Solving the socio-economic problems of the population	26	6,6
Clarify by tracing the boundaries of the ViNP	6	1,5
Reviewing the boundaries of the NVP in collaboration with the public	30	7,6
Integrating all local players into the management of the ViNP	110	27,9
Low-priced power grants that embers	10	2,5
Allowing people to fend for themselves in the park	23	5,8
Sharing land in the park	26	6,6
Raising awareness about protecting the environment	24	6,1
Don't know	15	3,8
Having a responsible government that cares about community problems	9	2,3
Cultivating a humanist spirit with park rangers	3	,8
Putting park management back in the hands of the public or other environmental partners	13	3,3
Restoring collaboration between ViNP managers and the public	74	18,8
Reforestation of areas along the park	3	,8
Total	394	100,0

This table shows that 110 out of 394 respondents or 27.9% believe that the solution lies in the integration of all local players in the management of the ViNP compared to 74 out of 394 respondents or 18.8% who think that collaboration between ViNP managers and the population should be restored. And the other respondents give their solution given the table.

Table 9: Crossing the variable working with managers and reports

			What are your relationships with the ViNP managers		Total
			Harmonious	Conflicts	
Work with the ViNP manager	Yes	Effective	69	24	93
		%	17,5%	6,1%	23,6%
	No	Effective	70	231	301
		%	17,8%	58,6%	76,4%
Total		Effective	139	255	394
		%	35,3%	64,7%	100,0%

In view of this table we note that out of 93 respondents are 23.6% who recognize good collaboration with managers, 69 respondents or 17.5% are harmonious versus 6.1% who are confrontational. Second, of the 301 respondents,

76.4%; 70 respondents or 17.8% are harmonious despite therefore not collaborating against 58.6% whose relationships are conflicting.

Assuming that, as a result of the anthropogenic activities and activities of armed groups, the ICCN, in collaboration with the Congolese state, is implementing the protection of biodiversity as the only current means of governance of the ViNP. To check the square-test between the collaboration of the actors and the public relations with the managers; We assume that these two variables are independent; hence the collaboration of the population with the actors do not totally influence their relations. To answer this hypothesis the square-test gives us the following:

We find from this table that the P (0,000) is smaller than the threshold of 0.05 and therefore we affirm that the reference hypothesis according to which following the anthropogenic activities and activities of armed groups, the ICCN in collaboration with the Congolese State are implementing the protection of biodiversity as the only current means of governance of the ViNP, the cooperation of actors depends on current relations with the population; so we understand that both variables are dependent.

Table 10: Test of square to assess the connection between the collaboration of actors with the populations and the relationships between them.

Khi-square test					
	Value	Degree of freedom	Asymptotic mean (bilateral)	Sig.exact (bilaterale)	Sig.exact (unilaterale)
Square test of Pearson	80,737 ^a	1	,000		
Correction for continuity	78,521	1	,000		
Report of plausibility	78,832	1	,000		
Test exact de Fisher				,000	,000
Association linéaire par linéaire	80,532	1	,000		
N observations valides	394				

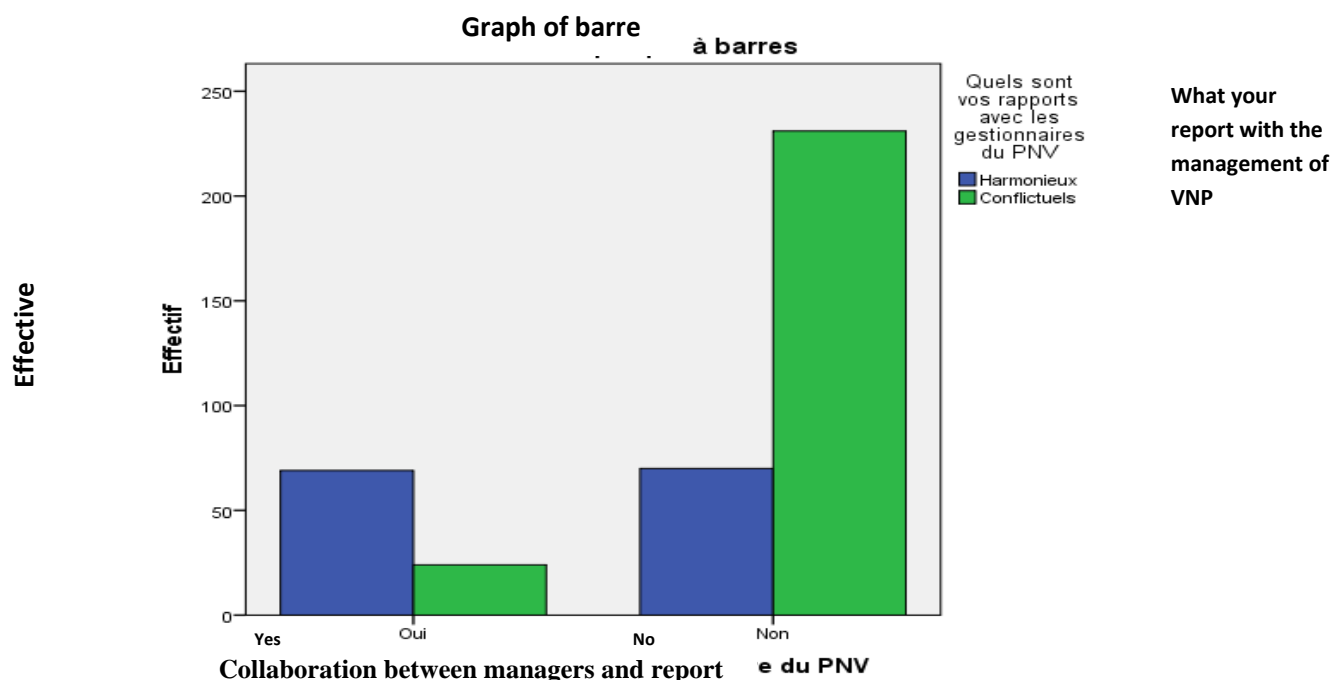


Fig.7: Illustrative chart of collaboration between managers and report status

V. DISCUSSIONS OF THE RESULTS

Our study shows that the integration of the community in the management of the ViNP can reduce its degradation while the lack of collaboration contributes more to the degradation of the Park. To overcome this situation; it is necessary to collaborate between actors, in our results 301 out of 394 respondents or 76.4% do not know the existing collaboration between ViNP agents with the local population see Figure No. 3 and No. 4 ,In this perspective Bamba shows in his study on the anthropisation and spatial-temporal dynamics of Forest Landscape in the DRC that the socio-economic, political and environmental issues require dialogue and collaboration between actors finally to limit the conflict related to management. Badly for the management of the ViNP, the climate remains tense between the local population and the managers of Virunga National Park who are suspicious of each other. , on the one hand the local population believes that ViNP is their environment of origin left by their ancestors and on the other hand the agents of the ICCN consider the local population as the category of non-intellectual, unformed and above all uninformed of the importance of the Park. Therefore, to avoid conflicts, park managers will have to consider an area reserved for the access of the population for multiple uses (grazing cows, cultivating, building, fishing, etc.). Apart from access, it is also necessary to redefine the mode of profit-sharing regenerated by the population-to-population park and the PNVi, i.e. the local population can find its account in the income of the park as a result of creating a conflict

resolution committee incorporating representatives of the population, local leaders and representatives of the ICCN. The contribution of NGOs and local associations is essential in conflict-related solutions as they play a buffer role between the local population and ICCN officials. 61.4% that the relationship is harmonious between the local population and the ONGs see Figure 5 and Table No.6. So the NGs and local associations would serve as opportunities to seize in the resolution of related conflicts to the management of the ViNP because there is no real resolution committee except what they call COCOSI (Community of Site Coordination) a kind of framework that brings together park managers and some members of communities corrupted by them to participate, this meeting is often held twice a year during which nothing is discussed or decided in terms of access and sharing of the benefits of the ViNP between managers and , rather than following the sad presentations of annual accomplishments by park managers. According to our respondents, they even manage to give painfully and mockingly the numbers of people killed during the years, who are nevertheless poor members of their community caught in the park looking for a way to live. Usually, in case of conflict, Vi NP managers make arrests against indexed persons and transfer him to the central prison often in Goma. It is important to materialize the Community Conservation Committee (CCC) in the ViNP, besides it is a framework recognized by the ICCN and the DRC in its national biodiversity conservation strategy, it

can reduce the conflict between the riparian population and the managers of the ViNP.

VI. CONCLUSION

The aim of this article was to conduct an analysis in the sustainable management of ViNP and to see the level of integration of the local community in its sustainable protection. To achieve this goal we surveyed 394 people as a riverside population in the 4 territories of North Kivu. After analysing the results, it is noted that the local population has been stripped of their traditional property rights, i.e. their freedom to act in the territories that were theirs before the creation of the ViNP. To counter the pressure from this population the colonial authorities had imposed the laws the fines for anything that can cross the boundaries of the protected area, it has created a climate of frustration until now and it is the very main cause of the conflict between the ICCN and the local community. Subsequently, collaboration is almost non-existent between the players involved in the management of the ViNP "... Absolutely nothing, no collaboration in the true sense; only when they have an activity to carry out of their choice outside of the ViNP they inform by press release this is the form of collaboration with these managers of the ViNP. What prevents collaboration according to the local community is their pride through their police and exclusion systems management of the ViNP. What can allow collaboration between population and managers of the Park is the dialogue through the establishment of a framework of consultation first, then integrate the population in the co-management of the park, and also create the system of access to the resources of the Park and sharing of interests regenerated by the park, without taxing the population. So the new governance policy of the ViNP will have to be based on the presence of local authorities, local NGOs in collaboration with the local population, we believe that the ViNP will be a place of protection for everyone by applying this integrationist approach which is the Landscape approach, especially since police methods of protection have only exacerbated the conflicts between park managers and local people. Therefore, the current conservation policy is highly contested by the local population, hence the openness to other actors for the sustainable management of the ViNP.

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